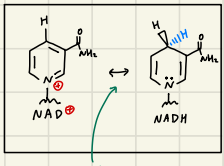
$NAD^{\oplus}$ & $NADP^{\oplus}$

extra Phosphate group

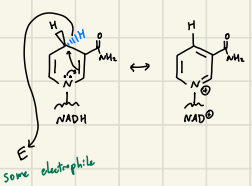
BUT business end same! (& chem 27 abbr)



requires enzyme be kinetically unfavorable

Oxidize NADH (subtract :H) — $2e^{\ominus}, 1H^{\oplus}$

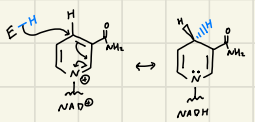
aka Reduce substrate



$NAD^{\oplus}$/$NADP^{\oplus}$ enzymes add / subtract :H from same side (back $\overline{\overline{H}}$ here)

Reduce NADH (add :H)

aka Oxidize substrate



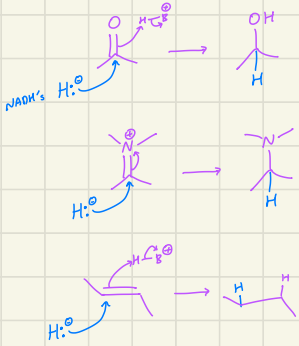
Common substrate reductions!

cofactor oxidized

(NADH → $NAD^{\oplus}$)

or

($FADH_2$ → FAD)



Red/Ox is NOT the same as deprot/protonation; PLS WATCH WHERE YOUR ARROWS ARE STARTING FROM AND POINTING TO :)

Fe Oxidase